

Universiti Teknologi MARA

**ARDUINO-BASED IGNITION
SYSTEM OF MOTORCYCLE VIA
GSM**

MOHAMMAD FAHMI BIN AYOB

**Thesis submitted in fulfilment of the requirements
for Bachelor of Computer Science (Hons.) Data
Communication & Networking Faculty of
Computer and Mathematical Sciences**

JULY 2019

ACKNOWLEDGEMENT

Alhamdulillah, praises and thanks to Allah because of His Almighty and His utmost blessings, I was able to finish this research within the time duration give. Firstly, my special thanks goes to my supervisor, Dr. Zolidah Kasiran who helped me a lot in completing this project successfully.

Special appreciation also goes to my beloved father Ayob bin Osman who supported me to keep on going on this project.

Last but not least, I would like to give my gratitude to my dearest friends. They also helped me in solving some problem in this project.

ABSTRACT

Transportation is important in our daily lives. Every year, the production of vehicles in Malaysia increased as time passes by and one of them are motorcycles as their common means of transportation. Along with the increment of users of motorcycle, motorcycle theft is also a typical problem over the years. In this study, a device is developed for theft prevention. Due to this problem, the owner would have a device connected to the motorcycle so that whenever it is used, it can alert them and give them additional feature such as turning off the ignition of the motorcycle. In this study, GSM GPRS would be used along with Arduino board which is instructed by phone to send instruction to the remote alarm device. It also gives control of the ignition of the motorcycle through the SMS features. The software component is the programmed Arduino board modules, connected to the phone via GSM which is the medium of communication of the user to the motorcycle and also serve as the main controller of the entire system. The result obtained shows that the proposed method can be potential motorcycle security measure as an alternative solution.

TABLE OF CONTENTS

CONTENTS	PAGE
SUPERVISOR APROVAL	I
STUDENT DECLARATION	II
ACKNOWLEDGEMENT	III
ABSTRACT	IV
TABLE OF CONTENTS	V
LIST OF FIGURES.....	VIII
LIST OF TABLES	X
CHAPTER 1 : INTRODUCTION	2
1.1 Background Study	2
1.2 Problem Statement.....	3
1.3 Research Questions.....	4
1.4 Research Objectives.....	4
1.5 Project’s Scope	5
1.6 Research Significance.....	6
1.7 Summary	6
1.8 Thesis Outline	6
CHAPTER 2 : LITERATURE REVIEW	8
2.1 Introduction.....	8
2.2.1 Alert System.....	8
2.2.2 Tracking System	11
2.2.2.1 Vehicle Tracking System	11
2.2.3 Cloud-computing	13
2.2.4 Internet of Things (IoT)	14
2.2.4.1 Definition of IoT	14
2.2.4.2 Internet of Things Implementation	14
2.2.4.3 Characteristic of Internet of Things	14
2.3 Wireless Network.....	15
2.3.1 Wireless sensor network	15

CHAPTER 1

INTRODUCTION

1.1 Background Study

People, mostly adult or students that are working or studying using motorcycle as their main transportation to go anywhere. It is also a preferable vehicle to go places because some parents can only afford to buy the motorcycle for their children. The motorcycle manufacturers such as Yamaha, Honda and Ninja are some example of manufactures that offer motorcycle product at an affordable price due to the demands of motorcycle by Malaysian (The Star Online, 2014). This is to show that, the motorcycle is one of the chosen transportation due to its benefits. Other than that, Transportation has contributed much to the development of economic, social, political and cultural fields by uplifting their condition (“Role and Importance of Transportation,” (n.d.) <https://marketinglord.blogspot.com/2012/06/role-and-importance-of-transportation.html>).

The increase in number of people using motorcycle has, contributed the problem to the motorcycle’s safety and security. It is one of the typical and convenient type of transportation but unfortunately, it is easy to steal, easy to disassemble, and easy to ship as parts (McDono, C, 2011). Besides, in road accident problem is also appalling in Malaysia. According to police statistics, out of the 7,152 people who died in road accidents, 4,484 (62.7 per cent) of them were motorcyclists MalayMail(2017) “Police statistics: Motorcyclists form bulk of road accident fatalities,”. Therefore, to cater this problem, the idea of Arduino-based ignition system of motorcycle via GSM with Tracking System using GSM/GPS that utilizes GSM, GPS and alarm system. It is conducted to make an addition to the